

### **PK-CM Sub-study**

Study AC-060A202: CONTROL

Patricia Sidharta





#### **PK-CM** sub-study

- Objectives
  - To evaluate the pharmacokinetics (PK) in this patient population
  - To confirm the safety profile of ACT-129968 (cardiac monitoring)
  - Comparison of fasted and fed state PK under steady-state conditions in patients
  - → To guide dosing in Phase 3 and in children
- Performed at select sites
  - 120 patients
  - must sign Addendum 1 ICF (voluntary)



## Study assessments PK-CM sub-study Only performed at selected sites

PERIODS	Name	SCREENING	TREATMENT			RUN-OUT	FOLLOW-UP			
	Duration	2 weeks			12 wee	ks			2 weeks	2 weeks
VISITS	Name	Visit 1 Screening	Visit 2 Randomization	Visit 3	Visit 4	Visit 5	Visit 6	Visit 7 End-of- Treatment	Visit 8 End-of-Study	Safety follow- up <sup>6</sup>
	Time	Week -2 (-4/+2 days)	Day 1	Week 1 (-1/+3 Days)	Week 2 (-1/+3 Days)	Week 4 (-1/+3 Days)	Week 8 (±3 Days)	Week 12 (±3 Days)	Week 14 (-1/+3 Days)	EOT + 30 Days (±1 Day)
Informed consent – Addendum 1 <sup>1</sup>		X								
**Blood sampling fasted <sup>2</sup>				X						
**Blood sampling fed <sup>3</sup>					X					
**Holter cardiac monitoring <sup>4</sup> X				X	X					
**ECG (12-lead) versus time profiles <sup>5</sup>				X	X					

- 1. The PK-CM will be conducted at selected centers (optional and voluntary). Patient must have signed Addendum 1 to the ICF.
- 2. Blood sampling over 12 hours without breakfast to determine the pharmacokinetic profile of ACT-129968.
- 3. Blood sampling over 12 hours after a high-fat, high-calorie breakfast to determine the pharmacokinetic profile of ACT-129968.
- 4. 24-hour 12-lead Holter cardiac monitoring at Screening and 12-hour Holter cardiac monitoring at Visit 4 and Visit 5. Instructions provided at Visit 1.
- 5. ECG (12-lead) will be extracted from the 12-lead Holter monitoring at the pre-specified PK blood-drawing time points.
- 6. The SAE follow-up visit will be performed by phone 30 days after EOT.
- \* Recorded in CRF.

CRF = case report form; ECG = electrocardiogram; EOT = end-of-treatment; ICF = informed consent form; PK = pharmacokinetic(s); PK-CM = pharmacokinetic cardiac monitoring; SAE = serious adverse event.

<sup>\*\*</sup> Electronically transferred to sponsor.



#### PK-CM sub-study: PK profiles at Visit 4 and 5

PK sampling at specified time points over a 12-hour period after drug administration in the clinic

- Visit 4: drug administration in fasted state
  - Patients should come fasted to the clinic
  - Patients that are not fasted should be rescheduled within the Visit window
  - Trough PK sample must be taken before the morning study drug dose
  - Patient must not eat in the 4-hour time period after morning dose
- Visit 5: drug administration in fed state
  - Patients should come fasted to the clinic
  - Trough PK sample must be taken before breakfast



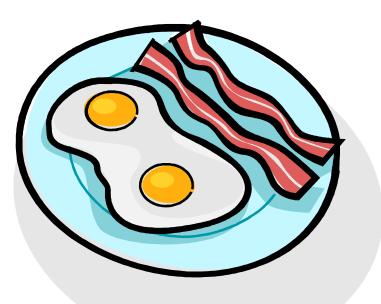
#### PK-CM sub-study: Meal at Visit 5

#### Visit 5: Meal

- A high-fat, high-calorie breakfast is given to patient in clinic
  - Composition of meal must follow FDA guidance
  - Patients should eat the complete meal within 30 minutes
    - A source record of meal completion (Meal Completion Form) should be filled out at Visit 5
    - Patients not eating entire meal will be Protocol Violators
  - Drug should be administered 30 minutes after start of meal
  - Each site should record composition of meal that will be provided to all patients in source data worksheet (Composition of Meal at Visit 5 Form)



## PK-CM sub-study: Meal at Visit 5 (cont) High Fat High Calorie Breakfast Example:







800-1000 Calories

- •150 protein
- •250 carbohydrate
- •500-600 fat



## PK-CM sub-study: Meal at Visit 5 (cont) Menu Examples

- McDonalds
  - 1 Sausage McMuffin
  - 1 Sausage McMuffin with egg
  - Hashbrowns (56g) or 240 mL
     Milk (3.5%)
- Meat
  - 2 eggs (10g butter)
  - 2 strips bacon
  - Hash browns (120 g)
  - 2 slices of toast (10 g butter)
    - (or 3 slices of toast, no hashbrowns
  - 240 mL milk (3.5%)

- Vegetarian 1
  - 1 egg (10 g butter)
  - 2 slices of toast (15 g butter)
  - 50 g camembert
  - Hash browns (120 g)
  - 200 ml milk (3.5%)
- Vegetarian 2 (No Pork)
  - 2 eggs (15 g butter)
  - 3 slices of toast (15 g butter)
  - 200 mL milk (3.5%)
  - 30 g Cashew nuts

## PK-CM Sub-study: Composition of Meal at Visit 5 Form



ACTELION  Creative Science for Advanced	53-5660	on of Meal at Visit 5	Version 2	
Compound: ACT-129968	Indication: Asthma	Protocol#: AC-060A202/	Protocol#: AC-060A202/CONTROL	
	Site identifi	cation		
L I I I	r	name of Principal Investi	gator	

This document should be completed <u>only by sites who are participating in the PK-CM sub-study</u>. The composition of meal provided at Visit 5 must follow FDA guidance (i.e., High-Fat, High-Calorie Breakfast must contain 150 calories protein, 250 calories carbohydrate and 500-600 calories fat).

Please check the box/es next to the meal/s that are used at the site. McDonalds: Vegetarian 1: - 1 sausage McMuffin - 2 eggs (15g butter) - 1 sausage McMuffin with egg - 3 slices of toast (15g butter) - Hashbrowns (56g) or 240 ml - 200 ml milk (3.5%) milk (3.5%) - 30g Cashew nuts Meat: Vegetarian 2: -2 eggs (10g butter) - 1 egg (10g butter)

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- 2 slices oftoast (15g butter)

- 50g Camembert cheese

Hashbrowns (120g)

- 200 ml milk (3.5%)

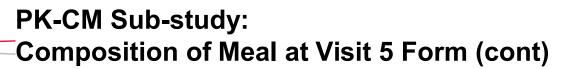
- 2 strips bacon

-Hashbrowns (120g)

Hashbrowns
- 240 ml milk (3.5%)

- 2 slices oftoast (10g butter)

or 3 slices of toast and no





- Other meal compositions are allowed
  - Please contact your Monitor for further details



Site identification				
site number	name of Principal Investigator			

Date: DDMMMYYYYY

The meal below w	as confirmed by Acte
Site-specific	meal:
-	
•	
•	33-32
•	90 m/s
•	99-7:
•	
•	

## PK-CM Sub-study: Visit 5 Meal Completion Form



ACTELION  Creative Science for Accepted Multi-		Meal Completion	Version 1	
Compound: ACT-129968	oound: Indication:		Protocol #: AC-060A202 / CONTROL	
	Patient iden	tification		
		لللللا		
subject number		site number		

This document should be completed <u>only for patients who are participating in the PK-CM substudy</u>. The Meal Completion form must be completed at Visit 5, following the intake of High-Fat, High-Calorie Breakfast.

Did patient eat the High-Fat, High-Calorie	Yes	No
Breakfast?		

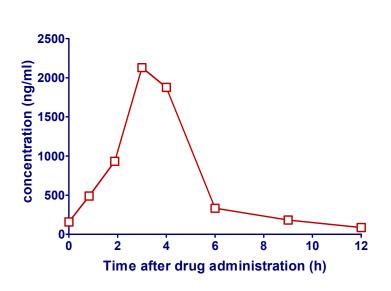
- Meal should be eaten within 30 minutes.
- Study drug should be administered 30 minutes after start of meal.
- If meal is not finished within 30 minutes, perform dosing at 30 minutes and let the patient continue eating.

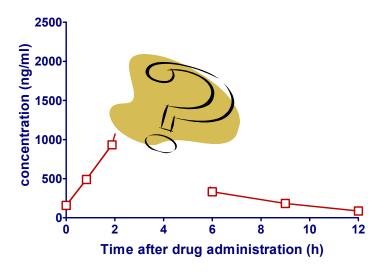
Name of investigator		
Date	Signature	



#### PK-CM sub-study: Recording of data

Exact recording of drug administration time and PK sampling time is key!





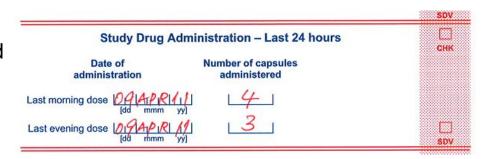


#### Study drug administration and PK sampling

#### - Visit 3-7 and Unscheduled Visits

#### **Study Drug Admin – Last 24hrs:**

- •Enter the date of the last morning dose and the date of the last evening.
- •Enter the number of capsules taken by the subject at each dose



#### **PK Sampling:**

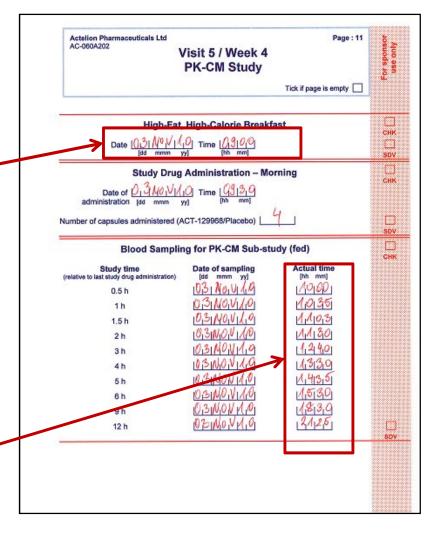
- •This is the trough pre-morning dose PK sampling that should be collected from ALL patients
- Enter the date and time of sampling





#### PK-CM Sub-study – Visit 4 & 5

- Only complete this page if patient is participating in the PK-CM sub-study.
- Enter the starting time
  - Complete meal should be consumed within the 30 min before drug administration
- Enter the date <u>at least</u> for 0.5h sampling.
   If all samples are taken on the same day, leave the subsequent date fields empty.
- Enter the "actual" time and <u>not</u> the scheduled time.





#### PK-CM sub-study: Cardiac monitoring

- ECG Holter monitoring
  - 24 hr Holter at V1
  - 12 hr Holter at V4 and V5
  - ECGs extracted from Holter at specific time points to explore ECG effects vs concentration.



#### PK-CM sub-study: Key messages

- Visit 4 (fasted) and 5 (fed) both must be completed in order to compare fasted and fed state in a patient.
- Should eat meal within 30 minutes and dose immediately thereafter (if meal not finished within 30 minutes, perform dosing at 30 minutes and continue eating)
- Composition of meal must follow FDA guidance
- Must eat entire meal (will be recorded on a specific source data form)
- Proper recording of drug administration and PK sampling time is key
- Only by accurately following the protocol can concentration-time and effect/safety-concentration relationships, and effect of food be investigated



### PK sample processing

**ACM Global - Central Laboratory** 



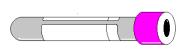
# ACM Services for AC-060A202 PK samples

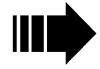
- Specimen Storage
- Provision of Laboratory kits
- ➤ Sample Collection & processing instructions
- Sample shipping logistics
- ➤ Data Resolution



### Sample Processing

2ml EDTA Purple Top Tube – PK, Visits 3, 4, 5, 6, 7 and Unscheduled (Plus Visits 4 and 5 for PK-CM Sub-Study Patients)







- 1 Draw the 2ml EDTA tube
- **2** Gently invert the tube for 10-15 seconds to ensure proper mixing of anticoagulant and blood
- **3** Place the EDTA tube on ice and perform sample processing within 30 minutes
- 4 Centrifuge the tube at 2000g for 10 minutes at 4°C \*
- **5** Remove the tube from the centrifuge after spinning and pipette <u>all</u> the plasma (top clear layer) into **1** x **2mL** amber cryovial provided at each draw
- 6 FREEZE IMMEDIATELY at -20°C until shipping



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### No Refrigerated Centrifuge?

- ➤ Cool the element in the fridge, or fill the bucket with ice
- > After blood draw and sample inversion, cool sample on ice
- ➤ Within 30 minutes, centrifuge sample at 2000g for 10 minutes in a centrifuge with pre-cooled elements.





### Holter monitoring

eResearchTechnology, Inc. (ERT)



#### **ERT** services

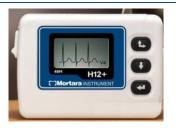
- ERT to provide ELI 150 ECG machine (12-lead ECG) and H12+ Holter device (Cardiac monitoring)
- Please refer to ECG presentation for:
  - My Study Portal
  - Actions of equipment arrival
  - Customer Care
  - Study setup
  - 12-lead ECG recording
  - Query process
  - Return of ECG material



#### The Holter Extraction Collection Process



**Mailed** 





Analyzed at ERT



ECG Results reported to site via My Study Portal



### The Holter Arrhythmia Collection Process







Holter Recording Captured at Site



Analyzed at ERT



Results reported to site via fax

Mailed via courier to ERT



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### Mortara H12+



Complete Transmittal Form



Record Holter



Mail Flashcard & Transmittal Form to ERT



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### Holter Visit Schedule

Actual Visit name
VISIT 1 (SCREENING)
VISIT 4 (WEEK 2)
VISIT 5 (WEEK 4)

#### Mortara H12+

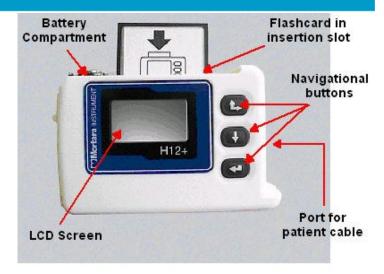


- Digital Holter recorder
- 12 lead data recording over 24 hour period
- Data stored on compact flashcard
- Single AA Battery Power
- Ability to test lead quality and lead amplitude



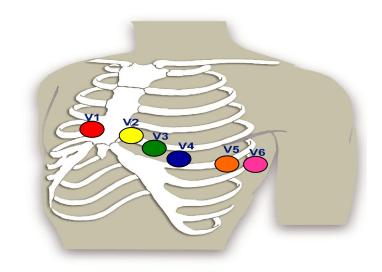
### Holter Processing Overview

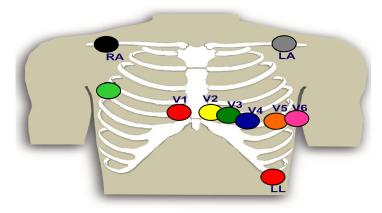
- Complete transmittal form
- Record serial number of Holter device and flashcard
- Insert new battery for each 24 hour recording
- Check lead quality and lead amplitude
- Begin recording
- The recorder will automatically stop recording after 24 hours
- Remove battery and flashcard
- Ship transmittal form and flashcard





### Standard Holter Electrode Placement



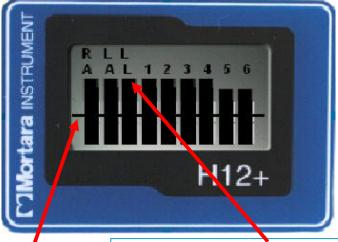


### Quality Assurance Lead Check

- Using the up and down arrow keys, scroll to the menu option 'LEAD CHECK'
- A full-bar graph means high quality signal and good electrode contact.
- For good quality recordings,
   the bars must reach or exceed
   the horizontal line on the
   display.

  Horizontal line





Good impedance



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### Quality Assurance Display ECG

 Using the up and down arrow keys, scroll to the menu option "DISPLAY ECG"



 Scroll through the different leads to verify amplitude and signal strength.



### Recording Holter

- Using up and down arrows, scroll to menu option "RECORD"
- Press the "ENTER" key to begin recording.
- During normal operation the current time is displayed and the message "RECORDING" is displayed







#### **Transmittal Form**

Sponsor: Actelion Pharmaceuticals Ltd Protocol: AC-060A202 Version: 1  Complete the information below for each Flashcard being sent to ERT (refer to the ERT Quick Guide for detailed instructions) Synchronize clinic clock and H12+ clock prior to each recording  Retain bottom copy for your records. Send tog copies, with flashcard, to ERT via UP3 at the following address:  1918 Market Street Suite 1000 Philadelphia, PA 19103  Principal Investigator:  Recorder Serial Number (S/N):  Located beliefed the beliefer yeak or on the back of device  Patient Number:  Gender:  Age (at screening visit)  CHECK VISIS  VISIT 1 (SCREENING)  UNSCHEDULED  Recording Start Date:  Age (at screening visit)  Losing Yeak  ERT to query if dosing time is prior to recording start time  **The conding Start Time:  The conding Start Time:  Th	H12+ Data Transmittal Form	Transmittal #:				
Version: 1  Complete the information below for each Flashcard being sent to ERT (refer to the ERT Quick Guide for detailed instructions) Synchrobze clinic clock and H12+ clock prior to each recording  Retain bottom copy for your records. Send top copies, with flashcard, to ERT via UPS at the following address:  Sile 1000 Philadelphia, PA 19103  Principal Investigator:  Recorder Serial Number (S/N):  Located behald the battery pack or on the back of device  FC Serial #:  CHECK VISSS  VISIT 1 (SCREENING)  UNSIT 4 (WEEK 2)  VISIT 5 (WEEK 4)  UNSCHEDULED  Recording Start Diate:  Recording Start Time:  The sile of t						
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Retain bottom copy for your records. Send top copies, with flashcard, to ERT via UPS at the following address:    Steel 1000	Complete the information below for each Flashcard being sent to EF					
Site Tech Initials:    Principal Investigator:   Last Name   Principal Investigator:   Site Tech Initials:   Principal Investigator:   P	Retain bottom copy for your records. Send top copies, w					
Principal Investigator:    Principal Investigator:		reet				
Principal Investigator:    Recorder Serial Number (SiN):   Located behind the battery pack or on the back of device   FC Serial #:   C		19103				
Patient Number:  Gender:  MALE FEMALE  Age (at screening visit)  CHECK VISIT  OHECK VISIT  VISIT 1 (SCREENING)  VISIT 4 (WEEK 2)  VISIT 5 (WEEK 4)  UNSCHEDULED  Recording Start Date:  Recording Start Time:  H H H  ST Now release  ERT to query if dosing time is prior to recording start time  CHECK VISIT  OFFICE ONLY: SITE DOES NOT WRITE BELOW THIS LINE>>  ERT Account Number:  Slot #:  DC ID:  PROCESSED DATE  CSS ID:  DC INITIALS:  EXTRACTIONS EXPORTED DATE  CSS ID:  DC MMMM  VYYYY  DC MMMMM  VYYYY  DC MMMMM  VYYYY  DC MMMM  VYYYY  DC MMMMM  VYYYY  DC MMMM  VYYY  DC MMMM  VYYYY  DC MMMM  VYYYY  DC MMMMM  VYYYY  DC MMMM  VYYYY  DC MMMM  VYYY  DC MMMMM  VYYY  DC MMMM  VYYY  DC MMMM	Principal Investigator:					
Gender: Age (at screening visit)  CHECK VISIT  VISIT 1 (SCREENING) VISIT 4 (WEEK 2) VISIT 5 (WEEK 4)  UNSCHEDULED  Recording Start Date: All MMM VIYYY  Workstation Number: 7 4 6 1 5 9 Office: Peterborough  Workstation Number: Slot #: DC ID: PROCESSED DATE CSS ID: DC INITIALS:  EXTRACTIONS EXPORTED DATE CSS ID: STATISTICS EXPORTED DATE CSS ID: DD MMM VIYYY  DD MMMM VIYYYY  DD MMMM VIYYY  DD MMMM VIYYYY  DD MMMM VIYYY  DD MMMM VIYYYY  DD MMMM VIYYY  D MMMM VIYYY						
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VISIT 1 (SCREENING)  VISIT 4 (WEEK 2)  VISIT 5 (WEEK 4)  VISIT 5 (WEEK 4)  VISIT 5 (WEEK 4)  VISIT 5 (WEEK 4)  Recording Start Date:  Recording Start Time:  VISIT 5 (WEEK 4)  Recording Start Date:  VISIT 5 (WEEK 4)  RECORD:  NAMM  VISIT 1 (SCREENING)  VISIT 5 (WEEK 4)  VISIT 5 (WEE		Sit)				
Recording Start Date:  Recording Start Time:		VISIT 5 (WEEK 4)				
Recording Start Time:						
Dosing the 2thour clock    Continue	Recording Start Date: DD MMM YYYY					
ERT to query if dosing time is prior to recording start time  <	н н м м	s the 'RECORD' button)				
ERT Account Number: 7 4 6 1 5 9 Office: Peterborough  Workstation Number: Slot #: PROCESSED DATE CSS ID:  RECEIPT DATE DC ID: PROCESSED DATE CSS ID:  DD MMMM 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Dosing and	ng time is prior to recording start time				
ERT Account Number: 7 4 6 1 5 9 Office: Peterborough  Workstation Number: Slot #:  RECEIPT DATE DC ID: PROCESSED DATE CSS ID:  DD MMMM 2 0	CEDT LICE ONLY CITE DOES NOT WRITE DELOW THIS LINES					
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CSS INITIALS.		2 0				
- Alas Farm (Kara Farkla)	Alast Form (if anylineble)					
Alert Form (if applicable)  Failure Notification  PLACE SCAN LABEL HERE		PLACE SCAN LABEL HERE				

- Multiple page NCR Form
- Complete demography and visit information
- Keep bottom copy for site records
- Submit to ERT with flash card
- The dosing time is very important in order to correctly extract ECGs from Holter

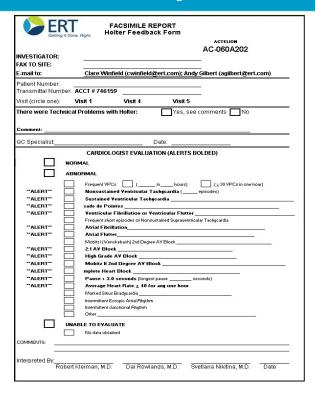


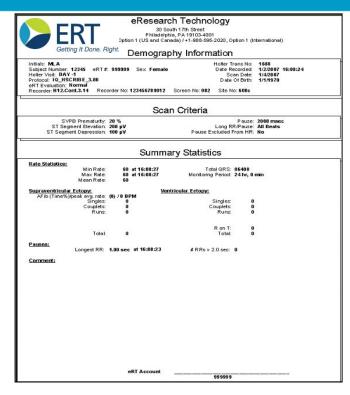
### Shipping the Flash Card to ERT

- Place the completed Transmittal Form and flash card in a padded envelope
- Place the padded envelope in a courier envelope
- Attach a completed courier airway bill and send
- Please refer to the Investigator Manual for additional instructions



### Holter Analysis Report





- Preliminary report sent within 72hours of receipt at ERT via fax to site
- Full report hard copy sent in 7-10 days via courier

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### Thank You

